Fascinating Organics on Asteroid Ryugu

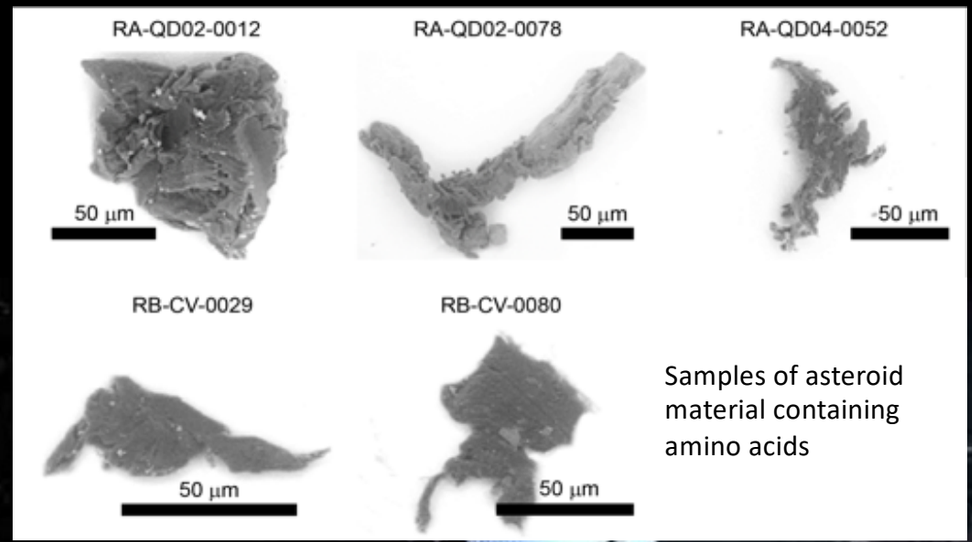
Goddard scientists searched for and found multiple amino acids in the material returned by the JAXA asteroid sample-return mission *Hayabusa*, which visited asteroid Itokawa.

Amino acids are the building-blocks of proteins and may have been originally brought to Earth in asteroids and meteorites.

All of the identified amino acids are *not* used in protein synthesis and are rare in biology, and so they are highly unlikely to be the result of terrestrial contamination. All were found in carbon-rich Hayabusa particles at abundances significantly greater than background levels.

This is the first evidence of any amino acids detected in material returned by an asteroid sample-return mission.

The presence of these amino acids in the returned samples indicates that asteroids may have delivered molecules necessary for life to the primordial Earth and elsewhere in the Solar System.



Samples of asteroid material containing amino acids

E.T. Parker, Q.H.S. Chan, D.P. Glavin, J.P. Dworkin (2022), "Non-Protein Amino Acids Identified in Carbon-Rich Hayabusa Particles", *Meteoritics & Planetary Science*, **in press**.